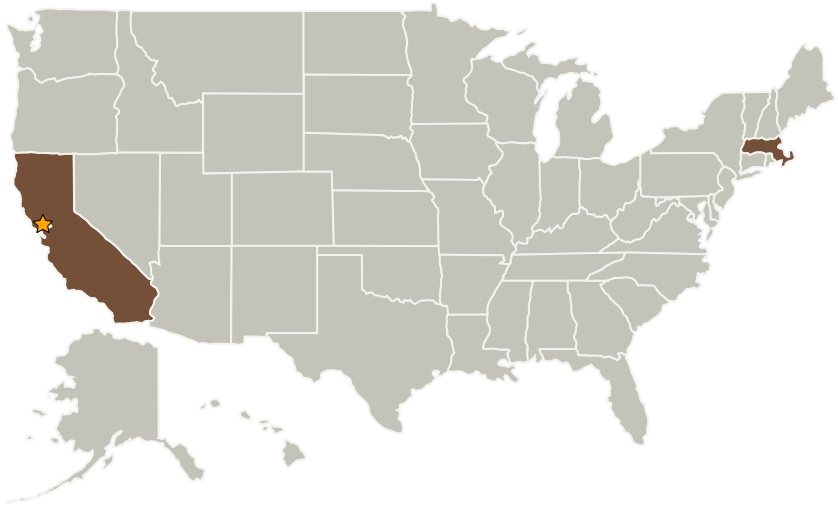
ESPA Based Secondary Payload Orbit Maneuvering System, Phase I

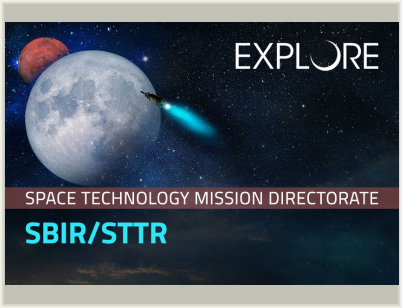
Completed Technology Project (2009 - 2009)

Project Introduction

Busek Co. Inc. proposes to develop/design an integrated propulsion, power, ACS, and separation module for secondary ESPA payloads. The standardized secondary payload orbit maneuvering system (OMS) will have; 1) 200 W or 600 W Hall effect thruster system for primary propulsion, 2) Xe cold gas thrusters for propulsive ACS, 3) solar array, batteries and power conditioning with steady state power of iÖ230/680W and 4) an integral structure that supports the payload and a LightBand separation mechanism for the ESPA ring. The proposed system architecture is based upon an EELV Secondary Payload Adapter (ESPA). Because the ESPA OMS has power, avionics, and propulsion, it is a free flying spacecraft capable of delivering payloads to disparate altitudes and inclinations. In Phase I, Busek will design an OMS to meet NASA mission needs including deploying large numbers of micro satellites and CubeSats. Preliminary analysis suggests the each secondary OMS can provide 780 m/sec delta velocity to a 125 kg payload. A key Phase I activity will be a prototypical orbital deployers adapter for clusters of CubeSat. With this adapter, the system could deliver large numbers of CubeSats to discrete, pre-defined orbits. Phase II products will include a clustering adapter ready to fly in 2010, along with the OMS propulsion system.

Primary U.S. Work Locations and Key Partners





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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Busek Company, Inc.	Supporting Organization	Industry Women-Owned Small Business (WOSB)	Natick, Massachusetts

Primary U.S. Work Locations	
California	Massachusetts

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.2 Electric Space Propulsion
    - TX01.2.2 Electrostatic